Space Weather Forecast

Issued on Friday, 18 March 2022 at 00:53 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Slight chance of minor geomagnetic storms on day 3 (20th March). Slight chance of isolated Moderate Class flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar Activity has been Low with two common class flares. There are currently three numbered sunspot regions on the visible disc. The largest, region is located in the northwest quadrant, and is magnetically complex and elongated. The other regions, in the northeast quadrant, are small, magnetically simple, weak and stable.
No CME's thought to be Earth-directed CMEs were observed in available imagery.

Solar Wind / Geomagnetic Activity: Solar winds remained at background levels, with a peak of 388 km/s at 17/0012 UTC and then gradually declined to end the period around 320 km/s. The magnetic field carried by the winds has been weak, with the north-south directed component neutral or weakly negative (southward). Geomagnetic activity has been Quiet.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be at mostly Low or Very Low levels with an ongoing slight chance of an isolated Moderate class flare, mainly from the large region in the northwest of the disc.

Solar Wind / Geomagnetic Activity: The CME from the filament eruption in the east on March 16th may give a glancing blow on day 3 (20th March). Also, the next potential coronal hole fast wind arrival is likely to be during day 3 (20th March). Geomagnetic activity is expected to be mostly Quiet with a chance of isolated Unsettled intervals until days 3 and 4 when there is an increased likelihood of Active intervals, and a chance of minor geomagnetic storms on day 3.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to be at background levels with no solar radiation storms, although there is a slight chance of an increase in response to any larger flares that may occur.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	1	30	20
Strong	G3	No	1	1	2	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	15	15	15	15
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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